

REMARKS

The Office Action mailed on May 18, 2006 has been received and reviewed. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

STATUS OF THE DRAWINGS

No amendments have been made to the drawings.

STATUS OF THE SPECIFICATION

The specification has been amended to include the reference characters illustrated in the drawings, but previously omitted from the description. Specifically, Items 612, 908, 910, and 914 have been added to the description. No new material has been added.

STATUS OF THE CLAIMS

Claims 1-37 are in the case. No Claims are being amended or added. Claims 1-37 were rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (6,732,267), hereinafter simply Wu.

In light of the rejections, a review of the present invention may help clarify the novelty of the Applicant's claims over the cited prior art. As shown in Figures 3-9 and elsewhere, the present invention updates a code image on a communications adapter. A new code image is loaded into memory on the communications adapter, the memory concurrently storing a copy of the old code image used by the communications adapter. A memory initialization module invoke then invokes the new code image to perform a memory initialization operation while the old code image is still executing. The new code image and old code image are then compared to determine a difference between the old code image and new code image.

In addition to differences, incompatibilities between the new code image and old code image may be identified and reconciled. The exact instructions that may be executed to reconcile the incompatibility may depend on the type of incompatibility that is reconciled. Reconciling the

incompatibility may comprise changing the order of initialization for storage registers, memory, or hardware devices, or converting the format of a data structure in order for the new code image to use the data structure. Still other types of operations may be executed to reconcile further types of incompatibilities.

If incompatibilities between the old code image and new code image do not exist or can be resolved before the host adapter is initialized, the host adapter may be initialized using a fastload initialization sequence instead of a standard initialization sequence. The fastload initialization sequence minimizes the amount of time necessary to initialize the host adapter, for example, by assuming that memory and/or hardware are already in a valid state because these states are verified prior to the code overlay.

Incompatibilities between the old code image and new code image that can not be resolved before the host adapter is initialized are resolved during the initialization sequence. Invoking the memory initialization code in the new code image facilitates handling the specific initialization sequences required by the new code image. The new code image may require initialization steps unanticipated by a standard initialization sequence. For example, the new code image may include new data structures in a memory location previously unused by the old code image that must be initialized.

Using a fastload code update and initialization sequence, the host adapter may continue processing I/O throughout most of the foregoing process. In some cases, the total time that the host adapter is off-line may be approximately 2-3 seconds, including approximately 1 second during which the light is “off.” When the light “turns off”, the host will see a state change and will log back in. The host will be able to log back in prior to exhausting any timeout period because the host adapter is only off-line for what may appear to be a “tolerable glitch,” rather than for over two minutes using conventional techniques. In a further embodiment, it may be unnecessary to “turn off” the light during the code image initialization method 900, depending on the specific topology of the communication system and the protocol employed by the host adapter.

It is well settled that under 35 U.S.C. §102 “an invention is anticipated if . . . all the claim limitations [are] shown in a single art prior art reference. Every element of the claimed invention

must be literally present, arranged as in the claim. The identical invention must be shown in as complete detail as is contained in the patent claim.” Richardson v. Suzuki Motor Co., Ltd., 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Applicant respectfully asserts that Wu does not teach or disclose each element of the independent claims.

Claim 1 recites, in pertinent part:

“an image load module configured to load a copy of a new code image in a memory on the **communications adapter**, the memory concurrently storing a copy of an old code image used by the communications adapter;
a memory initialization module configured to **invoke the new code image to perform a memory initialization operation**; and
an image overlay module configured to overlay the old code image with the new code image.” Emphasis added.

Applicant respectfully asserts that Wu does not teach or disclose “an image load module” configured to load a new code image in a memory on a “communication adapter.” Wu discloses a method for updating the system BIOS of a target system that verifies the validity of the new code image by executing a “checksum” procedure. A system BIOS operates on a motherboard of a computer system, typically a personal computer. The system BIOS is stored in memory of a BIOS chip on the motherboard. Applicants submit that a motherboard is not a communications adapter. As described in the specification, the communications adapter is an adapter used to facilitate communication between components of a storage system, a storage area network, or a communications system in which minimal adapter down time is desired. See Specification, ¶82.

Applicant respectfully asserts that Wu does not teach or disclose “memory initialization module” configured to “invoke the new code image to perform a memory initialization operation.” Instead, Wu describes new BIOS update code that is stored on a storage device and selectively loaded based on the status of an indicator. Wu Col. 4, lines 4-33. Wu does not describe any module or device that invokes the new code for a memory initialization operation. Instead, Wu describes a verification process for the new BIOS code. If the new BIOS code is not valid, the method in Wu is able to stay with the old BIOS code. However, Wu fails to teach or disclose a memory initialization module that invokes the new code image to perform a memory initialization operation. Wu is silent on memory initialization.

Claim 2 recites:

“a query module configured to identify a characteristic of the old code image and to determine a **difference** between the **old code image** and the **new code image**.” Applicant respectfully asserts that Wu does not teach or disclose a “query module” configured to “determine a difference between the old code image and the new code image.” Instead, Wu performs a “checksum” procedure which simply verifies the integrity of the data comprising the new BIOS update. The checksum procedure does not compare the old BIOS code image to the new BIOS code image. Therefore, Wu fails to teach or disclose a query module configured to “determine a difference between the old code image and the new code image.” Therefore, Applicant submits that Claim 2 is allowable.

Claim 3 recites:

“an image bridge module configured to **reconcile an incompatibility** between the old code image and the new code image” Applicant respectfully asserts that Wu does not teach or disclose a “image bridge module” configured to “to reconcile an incompatibility between the old code image and the new code image.” As explained above, Wu fails to compare the old code and the new code. Consequently, Wu also necessarily fails to reconcile any incompatibilities between the old code and the new code. Eventhough Wu performs a checksum procedure, this procedure has no ability to correct any errors that are detected. Therefore, even if the validity of the new BIOS were interpreted as an incompatibility, (which Applicants belief it is not), WU fails to teach reconciliation of such an incompatibility. Therefore, Wu fails to teach or disclose a image bridge module configured to “reconcile an incompatibility between the old code image and the new code image.” Therefore, Applicant submits that Claim 3 is allowable.

In summary, Applicant asserts that the cited prior art is not directed to identifying incompatibilities between the old code image and the new code image and does not invoke the new code image to perform a memory initialization operation. Furthermore, memory initialization is recited in each of the independent Claims (1, 16, 23, 24, and 37). Applicant submits that Claims 16,

23, 24, and 37 are allowable for the same reasons described above in relation to Claim 1. The remainder of the claims in the case are allowable as depending from allowable claims.

CONCLUSION

For the reasons stated above, Applicant asserts that Claims 1-37 are in condition for allowance and respectfully requests prompt allowance of the pending claims. In the event that the Examiner finds any remaining impediments to the prompt allowance of any of these claims which could be clarified in a telephone conference, the Examiner is respectfully urged to initiate the same with the undersigned.

Respectfully submitted,

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